FACT SHEET

REISSUANCE OF A GENERAL VPDES PERMIT FOR CONCRETE PRODUCTS INDUSTRIAL CATEGORY

The Virginia State Water Control Board has under consideration the reissuance of a general VPDES permit for point source discharges from the concrete products industrial category to surface waters.

Permit Number: VAG11

Name of Permittee: Any owner of a concrete products facility in the Commonwealth of Virginia agreeing to be regulated under the terms of this general permit.

Facility Location: Commonwealth of Virginia

Receiving Stream: Surface waters within the boundaries of the Commonwealth of Virginia, except those specifically named in Board Regulations and Policies which prohibit such discharges. Discharge to surface waters may be through a municipal separate storm sewer system.

The Virginia State Water Control Board has under consideration the reissuance of the general VPDES permit for point source discharges from the concrete products industrial category to surface waters. This permit covers the Standard Industrial Classification (SIC) Codes 3271 (Concrete Block and Brick) and 3272 (Concrete Products, Except Block and Brick). The permit regulation was modified on February 8, 2006 to include SIC codes 3271 and 3272. This permit will be effective October 1, 2008 and will expire on September 30, 2013.

All pertinent information is on file and may be inspected, and arrangements made for copying by contacting Elleanore Daub at:

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Activities Covered by this General Permit and Process Descriptions

This general permit will cover point source discharges of process wastewaters and storm water runoff associated with the operation of concrete products facilities where the primary industrial activity is classified as Standard Industrial Classification (SIC) Codes 3271, 3272 and 3273. Coverage also includes temporary or portable ready-mixed plants erected on or near construction sites. This general permit does not exclude the coverage for a concrete product facility with a secondary industrial activity co-located on site as long as the secondary activity does not generate any point source discharges. In 2006, the general permit regulation was amended to include SIC Codes 3271 (Concrete Block and Brick) and 3272 (Concrete Products, Except Block and Brick) in addition to 3273 (Ready Mix).

SIC 3273 - Ready-mix

Ready-mixed concrete is basically produced by two methods: dry batch mixing and central mixing. For dry batch mixing, the mix of cement and aggregate is weighed and transferred in a dry state to the truck along with a proportioned amount of water. The concrete is mixed in the truck on the way to the job. For central mixing, the concrete is prepared in a central mixer then transferred to a truck mixer or agitator for delivery.

In addition to cement, fly ash and aggregate, ready-mixed concrete typically contains admixtures and entrained air. Entrained air improves resistance to freezing and thawing. Admixtures may include calcium chloride, triethanolamine, calcium salt, lignosulfunic acid, vinosol, saponin, keratin, sulfonated hydrocarbon, fatty acid glyceride, vinyl acetate, and styrene copolymer of vinyl acetate as ingredients. These compounds may be added to obtain desired characteristics, such as slower or more rapid curing times.

Generally, there are two types of ready-mixed concrete plants: permanent (also known as stationary) and temporary which are usually portable. A permanent plant usually produces various types of concrete for numerous customers. The permanent plant may operate either as a dry batch mixing plant or central mixing plant. A large facility may even consist of both processes. Portable plants are used on large highway and airport paving jobs. These plants can operate using either dry batch mixing or central mixing. Portable plants have the same significant materials and industrial activities as permanent facilities. Therefore, portable plants are covered under this general permit.

The wastewater discharge from ready-mixed concrete plants includes truck washout, truck wash-off, central mixer washout, storm water runoff, and noncontact cooling water from geothermal system or other such systems.

Process wastewater is generated by the cleaning of trucks and equipment that come in contact with cement and "wet" concrete. Trucks are usually washed on the outside after they are loaded with fresh concrete, before leaving the plant. They are also washed inside and out at the end of the day. Washing down of areas where this cleaning takes place also generates process wastewater. Process wastewater can also be generated from engine steam cleaning in the vehicle/equipment maintenance shop. Discharges of process wastewater may contain some storm water associated with industrial activity which has come in contact with raw material stockpiles, dried waste concrete, or vehicle parking or maintenance areas. The storm water can be contaminated at the truck loading site and at the truck washing area.

Treatment or control of process wastewater and commingled storm water usually consists of settling basins to reduce the solids content and acid addition to neutralize the high pH of the wastewater. Solids removal may be accomplished through a series of settling ponds or sloped slab separation basins. Mechanical clarification devices such as screw washers are used by some facilities to recover coarse aggregate and sand for reuse. The clarified wastewater may be completely or partially recycled and reused. When discharge is necessary, pH neutralization often is required prior to discharge. Mode of discharge can be batch or continuous.

Another source of wastewater at ready-mixed concrete plants is noncontact cooling water from a geothermal system or other such systems. This water may be from a groundwater well or potable water supply. The water is used to raise the temperature of concrete make up water in winter and lower it in summer. The temperature control system operates so that the cooling water does not come in direct contact with the concrete or the raw materials. Once the heat transfer has taken place, the water may be discharged or returned to the system for recycle. Noncontact cooling water may be commingled with process wastewater or discharged through a separate outfall. At the time of reissuance, it is believed that very few, if there is any, facilities currently employ such system to adjust the temperatures of concrete make up water.

Storm water associated with industrial activity that is not combined with process wastewater or noncontact cooling water may be discharged from ready-mixed concrete plants. This storm water may have come in contact with or been exposed to raw material (sand, gravel or stone) stockpiles, dried waste concrete, or vehicle parking or maintenance areas. Fugitive dust is prevalent on the grounds at concrete plants. Shrouds and vacuum recovery units are used to minimize dust releases at concrete mixing and truck loading locations. Cement and aggregate unloading from railroad cars, trucks or barges is another potential source of contamination for storm water. No treatment is normally employed prior to such discharge. Some facilities store the storm water in a retention pond and operate the basin in a "no-discharge" mode. The water collected in the retention pond either evaporates, infiltrates, or is used as process water on site.

SIC 3272 - Concrete Products, Except Block and Brick

Concrete Products, Except Block and Brick include concrete pipe, precast concrete products, and prestressed concrete products.

Concrete Pipe. Concrete pipe products include: culvert pipe (reinforced and non-reinforced), storm sewer pipe (reinforced and non-reinforced), sanitary sewer pipe (reinforced and non-reinforced), pressure pipe (reinforced, prestressed, pretensioned and other pressure pipe), irrigation pipe and drain (tile), and other concrete pipe (e.g., manholes and conduits).

Concrete pipe is generally produced by three methods: (1) the vertical packerhead (tamping) method; (2) the vertical cast method; and (3) the spin casting production method. The vertical packerhead method uses a machine called a packerhead to compact and vibrate a moist concrete mix into a steel form. The method is used to produce pipe up to five feet in diameter. The vertical cast method is used to produce reinforced pipe. Due to labor cost and time, this method is generally limited to production of reinforced pipe over five feet in diameter. A wet concrete mix from a central mixter is transported by buckets and poured into a vertical steel form containing a reinforcing cage. The steel forms are stripped from the pipe after the concrete sets. The spin casting production method is used to produce reinforced pipe up to four feet in diameter. The form containing a reinforcing cage is placed horizontally and rotated at a high rate, while concrete is added by a reciprocating nozzle. The spinning action densifies the concrete on the inside of the form and dewaters it. The inner surface of the pipe is finished by a mechanical roller. Reinforced concrete pressure pipe, produced by spin casting, uses a hydraulically tested sheet steel cylinder form that remains as part of the finished pipe.

All concrete pipe is cured at ambient conditions or spray cured, until it reaches a certain green strength, at which time it is cured by low pressure steam either in a kiln or in a chamber constructed around the pipe. For pipe produced by the packerhead method, the forms are usually removed before steam curing, while for the vertical

cast and spin casting methods the forms usually remain on the pipe during curing. In all cases except reinforced concrete pressure pipe, a form release oil is used. In the production of reinforced concrete pressure pipe additional processes include: hydraulic testing of the cylinder, wrapping the cured pipe with high strength steel wire, and coating the steel wire wrap with concrete grout. There is no waste water from atmospheric curing. Waste water from steam curing and spray curing contains suspended solids, oil and grease and has a high pH.

Precast Concrete Products. Precast concrete products include: roof and floor units (slabs and tile; joints and beams); architectural wall panels; pilings, posts and poles; cast stone (products for architectural purposes); prefabricated building systems; other precast construction prod.; burial vaults and boxes; silo staves; septic tanks; dry-mixed concrete materials (e.g., Sakrete); other precast (e.g., laundry tubs).

Simple precast concrete products are produced by pouring the concrete from a mixer into steel forms, and allowing the product to cure, either at ambient conditions, with low pressure steam, or with a water spray. Curing takes place in two steps, first with the form on then off. The second curing step usually takes place at ambient conditions. Reinforced concrete products contain steel structural members to provide increased strength.

Precast architectural wall panels are generally finished to produce a decorative surface of exposed aggregate. For the most common production method, a retarder is spread in the form bottom, reinforcing steel is placed in the form, and the concrete mix is cast. When the concrete has set and the form is removed, the surface is washed with a weak acid solution, sandblasted, or washed with high pressure water to clean away the unset surface cement and expose the course aggregate. The panel is then cured completely in a storage yard.

Prestressed Concrete Products. Prestressed concrete products are chiefly used as structural and architectural components and include: single tees, double tees, and channels; piling, bearing piles, and sheet piles; bridge beams; solid and hollow cored slabs and panels; other prestressed products (e.g., arches); joist, girders, and beams (other than bridge beams).

Prestressed concrete products are produced in similar fashion as precast reinforced concrete products with the substitution of steel cables under tension instead of steel rods for reinforcement. Prestressed concrete products may be either pretensioned or post-tensioned.

The wastewater discharge from Concrete Products, Except Block and Brick facilities includes transport bucket and central mixer washout, form wash-off, condensate from steam curing, spray curing wastewater, surface finishing water, spin cast wash-water, pre-wetting of imbedded pressure pipe, storm water, boiler blowdown, noncontact cooling water from bearings and compressors, and miscellaneous equipment wash-off. Pollutants in the wastewater discharge include suspended solids, oil and grease, high pH, and COD.

SIC 3271 - Concrete Block and Brick

Concrete block and brick are classified into the following products: structural block produced with lightweight aggregate such as cinder, expanded shale, pumice or other materials; structural block produced with heavyweight aggregate such as sand, gravel, crushed stone or other materials; decorative block - such as screen block, split block, slump block and shadowal block; and concrete brick.

The manufacturing process for concrete block and brick consists of mixing, forming, and curing. Typically, the aggregate, cement and water are weighed and mixed in batches of about four cubic yards in a rotary mixer. The concrete mix used for production of block and brick contains less water than ready-mixed concrete. The type of aggregate being used will determine if a lightweight or heavyweight product is produced. Color may be added to the mix to produce decorative block. The mixed concrete is fed into an automatic block molding machine, where the moist mix is rammed, pressed or vibrated into the desired shape. Following forming, the material is stacked onto iron framework cars and allowed to cure. To produce a structural high-strength block within a reasonable time period, the block must be cured under moist conditions. The three basic methods of curing are: (1) atmospheric; (2) low pressure steam; and (3) autoclave or high pressure steam.

Atmospheric curing produces a lower strength block than the other two methods of curing. Atmospheric curing uses ambient heat and humidity, and heat of hydration to cure the block, and also includes curing within enclosures at ambient conditions. Curing usually takes place for about four hours. There are no additional wastewaters produced from this curing process.

In the low pressure steam method, the loaded curing cars are placed into a chamber or kiln where low pressure steam less than 150 psi is injected from perforated pipes for approximately 8-10 hours, depending on mix conditions, user specifications, and ambient temperature. Waste water from this curing method consists primarily of steam condensate, which contains some suspended solids, dissolved solids, COD, oil and grease and a high pH. The low pressure steam is generated by a boiler which requires periodic blowdown.

The autoclave or high pressure steam curing method produces a higher strength block with less shrinkage in less time than the low pressure steam curing method. For this method the curing cars are loaded in a large horizontal, cylindrically shaped autoclave where high pressure steam (greater than 150 psi) is injected or convected. After a curing cycle of about 8 hours the steam is released to the atmosphere and the blocks are removed and stored. An alternative method of steam production uses a hot oil convection method, where water is placed in a trough within the autoclave and hot oil heats the water into steam. Following curing, the autoclave is allowed to cool and a portion of the steam condenses back into the trough. Periodically the trough water is discharged because the alkalinity, due to the pickup of calcium oxide, makes the water corrosive to the steel racks of the curing cars. Wastewater discharges from the autoclave curing process can include boiler blowdown, autoclave blowdown condensate, and autoclave purge. Pollutants include suspended solids, COD, oil and grease, and high pH, resulting from autoclave blowdown condensate and in the convection process, autoclave purge.

The primary source of wastewater from concrete block and brick facilities is equipment wash-off, including: delivery trucks, conveyor belts, transport buckets, central mixers and forms. Generally only suspended solids are a problem in this wastewater and can be handled with simple settling. Other potential sources of wastewater include: accidental spill wash-down, storm water runoff, and noncontact cooling of bearings and compressors. Spill wash-down and storm water runoff can be handled with other wash-waters. The noncontact cooling water (and other clean wastewater) can be used for mixing water makeup, aggregate moisture control, and yard dust control.

Part I A - Effluent Limitations, Monitoring Requirements and Their Basis

The permit retains the monitoring requirements and limits of the previous permit. The parameters to be limited in process wastewater discharges are pH, total suspended solids, total petroleum hydrocarbons (TPH), total residual chlorine (TRC) and temperature. These parameters were chosen based on the evaluation of 1992-1996 DMR data for the issuance of the first general 'ready-mix' permit in 1998. Heat, chlorine and ammonia will be pollutants of concern when noncontact cooling water is commingled with process wastewater prior to discharge. Limitation and monitoring requirements for temperature, total residual chlorine and ammonia remain in this general permit. Specific rationale for all parameters is discussed below.

1. Discharge of process wastewater which may contain input from the vehicle/equipment maintenance activities, and may be commingled with noncontact cooling water or storm water runoff:

Parameter	Limitation	Frequency[6]
Flow	No limit, estimate and report average and maximum values	
Total Suspended Solids	30 mg/l avg, 60 mg/l max.	
pH	6.0 minimum, 9.0 maximum [1]	
Total Petroleum Hydrocarbons[2]	15 mg/l maximum	
Total Residual Chlorine[3]	0.016 mg/l, avg. and max.	
Ammonia-N[3]	No limit, report maximum value	
Temperature[4]	Maximum [5]	

(1) Where the Water Quality Standards (9 VAC 25-260) establish alternate standards for pH in the waters receiving the discharge, those standards shall be the maximum and minimum effluent limitations.

(2) Total Petroleum Hydrocarbons limitation and monitoring are only required where a discharge contains process wastewater generated from the vehicle/equipment maintenance activities. Total Petroleum Hydrocarbons shall be analyzed using the Wisconsin Department of Natural Resources Modified Diesel Range Organics Method as specified in Wisconsin publication SW-141 (1995), or by EPA SW-846 Method 8015C for diesel range organics, or by EPA SW-846 Method 8270D. If Method 8270D is used, the lab must report the combination of diesel range organics and polynuclear aromatic hydrocarbons.

(3) Chlorine limitation, and chlorine and ammonia monitoring are only required where a discharge includes cooling water that is chlorinated or contains chloramines. Ammonia monitoring applies only where the source of cooling water is disinfected using chloramines.

(4) Temperature limitation and monitoring are only required where a discharge contains cooling water.

(5) The effluent temperature shall not exceed a maximum 32 ^{o}C for discharges to non-tidal coastal and piedmont waters, 31 ^{o}C for mountain and upper piedmont waters, 21 ^{o}C for put and take trout waters, or 20 ^{o}C for natural trout waters. No maximum temperature limit applies to discharges to estuarine waters.

For estuarine waters, non-tidal coastal and piedmont waters, mountain and upper piedmont waters, and put and take trout waters, the effluent shall not cause an increase in temperature of the receiving stream of more than 3°C above the natural water temperature. For natural trout waters, the temperature of the effluent shall not cause an increase of 1 °C above natural water temperature. The effluent shall not cause the temperature in the receiving stream to change more than 2 °C per hour, except in the case of natural trout waters where the hourly temperature change shall not exceed 0.5 °C.

Natural temperature is defined as that temperature of a body of water (measured as the arithmetic average over one hour) due solely to natural conditions without the influence of any point-source discharge.

(6) Except for TPH, for a facility that was covered by the previous general permit, and reduced monitoring was granted and compliance demonstrated, monitoring frequency shall be 1/quarter. In all other cases, monitoring shall be once per month for the first year of permit coverage. If the first year results demonstrate full compliance, monitoring will be reduced to once per quarter. Should the permittee be issued a Warning Letter related to violation of effluent limitations, a Notice of Violation, or be the subject of an active enforcement action, monitoring frequency shall revert to 1/month, upon issuance of the letter or notice or initiation of the enforcement action, and remain in effect until the permit's expiration date. This requirement was added to address concerns of noncompliance that may occur after reduced monitoring was granted. For TPH, monitoring is required for once per 3 months. All samples are collected by grab, except for temperature, by immersion/stabilization.

Prior to issuing coverage under the reissued general permit, the staff should review the DMRs received after the reduced monitoring frequency was granted during the current permit term. If full compliance is demonstrated, the discharge is eligible for reduced monitoring frequency under the reissued general permit. Request for monitoring reduction should be initiated by the permittee and monitoring can only be reduced when the authorization is received from the regional office. In order to demonstrate compliance, it is anticipated that 12 data points will be gathered in the first year unless no discharge is reported in a particular month. Before granting reduced monitoring the permit writer should consult with the inspector to verify good operating practices at the facility and that an inspection has been conducted recently.

TSS

Although there are no water quality standards or federal effluent guidelines for total suspended solids for the industrial category covered by the general permit, the Department has decided that such limits are necessary for the protection of the receiving waters. The total suspended solids limitations are established at levels which, based on the Department's experience with individual VPDES permits, are achievable with conventional treatment technology and which will prevent the build-up of solids on the bottoms of receiving waters.

pH

The pH limitation is based upon Virginia's Water Quality Standards (9 VAC 25-260). Because the facility may discharge into the receiving water at zero low flow conditions, the limitation of the water quality standard on the effluent is appropriate.

TPH

Due to the concern that process wastewater generated from engine steam cleaning in the vehicle/equipment maintenance shop may carry petroleum-based pollutants (diesel range organics), this general permit proposes a TPH limitation of 15 mg/l for a discharge with such input. The TPH maximum limitation is based on the ability of simple oil/water separator equipment. Historically, oil and grease (O&G) limits have been placed in the VPDES permits for many facilities that handle petroleum products or where contamination by petroleum products is of concern. The O&G limits now are expressed as Total Petroleum Hydrocarbons (TPH) instead since there is little reason to expect fatty matter from plant and animal sources. Based on the recommendation provided by Guidance Memo # 96-002, a one to one ratio between O&G and TPH is assumed. The TPH testing protocols were updated during the 2003 general permit issuance and again in 2008.

TRC

The general permit contains a TRC limit in order to ensure that the Virginia Water Quality Standards (9 VAC 25-260-140) are maintained in the receiving waters regardless of the dilution available to the discharge. The TRC limit is derived in accordance with Guidance Memo #00-2011 Guidance on Preparing VPDES Permit Limits (Dated August 24, 2000) and the chorine limit was revised in 2003 using this guidance. Implementation of the toxic standards including chlorine was updated through this guidance as a result of modifications to the Virginia Water Quality Standards (9 VAC 25-260) made at that time. A printout of the STATS program output is attached. TRC limitation and monitoring requirements are applicable where the source of cooling water is chlorinated.

Ammonia

The permit contains monitoring requirements for ammonia. Chloramines are common chemicals used for disinfection of drinking water. Ammonia is a by-product of chloramines use. Therefore, ammonia monitoring is required in cases where a discharge contains cooling water that is disinfected using chloramines as identified in the registration statement Item 2.G.a. The purpose is to collect data to evaluate whether the general permit is appropriate for such discharges and/or whether ammonia limits may be required in such discharges for the next reissuance of the general permit. This is consistent with the General VPDES Permit for Cooling Water Discharge (9 VAC 25-196).

All limits should be considered as two significant digits for compliance purposes as per special condition Part I.B.15. b.(4) and in accordance with Guidance Memo No. 06-2016 Significant Figures for Discharge Monitoring Reports.

2. Discharge of noncontact cooling water:

Parameter	Limitation
Flow	No limit, estimate and report average and maximum values
pH	6.0 minimum, 9.0 maximum (1)
Total Residual Chlorine(2)	0.016 mg/l avg. and max.
Ammonia-N(2)	No limit, report maximum value
Temperature	Maximum (3)

(1) Where the Water Quality Standards (9 VAC 25-260) establish alternate standards for pH in the waters receiving the discharge, those standards shall be the maximum and minimum effluent limitations.

(2) Chlorine limitation and monitoring are only required where the source of cooling water is chlorinated. Ammonia monitoring applies only where the source of cooling water is disinfected using chloramines.

(3) The effluent temperature shall not exceed a maximum 32 ^{o}C for discharges to non-tidal coastal and piedmont waters, 31 ^{o}C for mountain and upper piedmont waters, 21 ^{o}C for put and take trout waters, or 20 ^{o}C for natural trout waters. No maximum temperature limit applies to discharges to estuarine waters.

For estuarine waters, non-tidal coastal and piedmont waters, mountain and upper piedmont waters, and put and take trout waters, the effluent shall not cause an increase in temperature of the receiving stream of more than 3^{o}C above the natural water temperature. For natural trout waters, the temperature of the effluent shall not cause an increase of 1 ^{o}C above natural water temperature. The effluent shall not cause the temperature in the receiving stream to change more than 2 ^{o}C per hour, except in the case of natural trout waters where the hourly temperature change shall not exceed 0.5 ^{o}C.

Natural temperature is defined as that temperature of a body of water (measured as the arithmetic average over one hour) due solely to natural conditions without the influence of any point-source discharge.

(4) For a facility that was covered by the previous general permit, and reduced monitoring was granted and compliance demonstrated, monitoring frequency shall be 1/quarter. In all other cases, monitoring shall be once per month for the first year of permit coverage. If the first year results demonstrate full compliance, monitoring will be reduced to once per quarter. Should the permittee be issued a Warning Letter related to violation of effluent limitations, a Notice of Violation, or be the subject of an active enforcement action, monitoring frequency shall revert to 1/month, upon issuance of the letter or notice or initiation of the enforcement action, and remain in effect until the permit's expiration date. All samples are collected by grab, except for temperature, by immersion/stabilization.

pH

The pH limitation is based upon Virginia's Water Quality Standards (9 VAC 25-260). Because the facility may discharge into the receiving water at zero low flow conditions, the limitation of the water quality standard on the effluent is appropriate.

TRC and Ammonia

The general permit contains a TRC limit in order to ensure that the Virginia Water Quality Standards (9 VAC 25-260-140) are maintained in the receiving waters regardless of the dilution available to the discharge. The TRC limit is derived in accordance with Guidance Memo #00-2011 Guidance on Preparing VPDES Permit Limits (Dated August 24, 2000). A printout of the STATS program output is attached. TRC limitation and monitoring requirements are applicable where the source of cooling water is chlorinated. Ammonia monitoring is only required in cases where cooling water is disinfected using chloramines.

The primary pollutant associated with noncontact cooling water discharges is the heat taken up by the water. The general permit will limit temperature in these discharges so that the receiving waters will not exceed the maximum temperature established in the Water Quality Standards (9 VAC 25-260-50). The general permit also limits temperature in these discharges so that the rise above natural temperature and the maximum hourly temperature change in the receiving waters will not violate the Water Quality Standards (9 VAC 25-260-60, 70 and 80).

All limits should be considered as two significant digits for compliance purposes as per special condition Part I.B.15.b.(4) and in accordance with Guidance Memo No. 06-2016 Significant Figures for Discharge Monitoring Reports.

3. Discharge of storm water which does not combine with other process wastewaters or noncontact cooling water:

Parameter	Limitation
Flow	No limit, estimate volume discharged during entire monitored storm event
Total Petroleum Hydrocarbons (1)	No limit, report maximum value
Total Suspended Solids	No limit, report maximum value
Total Recoverable Iron	No limit, report maximum value
pH	No limit, report maximum & minimum values

(1) Total Petroleum Hydrocarbons shall be analyzed using the Wisconsin Department of Natural Resources Modified Diesel Range Organics Method as specified in Wisconsin publication SW-141 (1995), or by EPA SW-846 Method 8015C for diesel range organics, or by EPA SW-846 Method 8270D. If Method 8270D is used, the lab must report the combination of diesel range organics and polynuclear aromatic hydrocarbons.

Monitoring is required once per year by grab sample, collected during the first thirty minutes of the discharge. If during the first thirty minutes it was impracticable, then a grab sample shall be taken during the first hour of discharge.

Guidance on the conduct of storm water sampling is provided by the EPA in the document titled NPDES Storm Water Sampling Guidance Document, publication number EPA 833-B-92-001, July 1992.

Samples taken in compliance with the monitoring requirements specified above (A, B, and C) shall be taken at the outfall location(s) identified in the approved registration statement. In the cases where discharges to surface waters are through the municipal separate storm sewer systems, samples should be taken at the point where the discharge enters the municipal separate storm sewer system.

The monitoring requirements for storm water are consistent with the monitoring requirements of the original storm water general permits (1994) which were based on EPA's Baseline Industrial Activity Storm Water General Permit (1992). One difference is that oil and grease was replaced by total petroleum hydrocarbons. Historically, oil and grease (O&G) limits have been placed in the VPDES permits for many facilities that handle petroleum products or where contamination by petroleum products is of concern. The O&G monitoring requirement is expressed as Total Petroleum Hydrocarbons (TPH) instead since there is little reason to expect fatty matter from plant and animal sources. Based on the recommendation provided by Guidance Memo # 96-002, a one to one ratio between O&G and TPH is assumed. The TPH testing protocols were updated during the 2003 general permit issuance and compliance staff at DEQ have stated it is still an acceptable procedure.

In 2003, in order to maintain consistency with the EPA NPDES Storm Water Multi-Sector General Permit, total recoverable iron was added and chemical oxygen demand deleted from the parameter list for storm water discharges

Also added in 2003, a quarterly visual monitoring requirement. The deadline for annual monitoring report was also changed in 2003 to the tenth day of January of each year. Specific storm event data is required to be submitted with the DMR.

It is imperative for the protection of water quality in the streams receiving the storm water runoff from a concrete operation that appropriate storm water pollution prevention controls and practices be designed and implemented at these facilities. The permittees are required to demonstrate that they have implemented these controls and practices by monitoring discharges that are made up exclusively of storm water for pH, total petroleum hydrocarbons, total suspended solids and total recoverable iron once per year over the term of the permit. These parameters have been determined to be pollutants of concern in storm water from this industrial category. This monitoring requirement is consistent with the requirement for storm water monitoring at concrete plants that are covered under the EPA NPDES Storm Water Multi-Sector General Permit reissued on October 30, 2000.

All limits should be considered as two significant digits for compliance purposes as per special condition Part I.B.15. b.(4) and in accordance with Guidance Memo No. 06-2016 Significant Figures for Discharge Monitoring Reports.

Part I B - Special Conditions

1. Restriction of floating solids and visible foam discharges

This condition is required to implement the Water Quality Standards (9 VAC 25-260-20).

Restriction of solids deposition in surface water in the vicinity of the outfall as a result of the industrial activity. This requirement is due to concerns from staff of concrete and raw product residue entering the stream at some operations. Improved housekeeping on site should maintain this requirement.

2. Materials handling/storage

Raw materials and products are to be stored and handled so that any untreated discharge of pollutants to surface waters is prevented.

3. Vehicles and equipment maintenance

Vehicles and equipment used in the industrial activity are to be operated and maintained in a manner that prevents pollution of surface or ground waters. This special condition addresses best management practices for activities associated with vehicle maintenance that take place at a typical concrete products facility.

4. Restrictions of washing activities
All washdown and washout of trucks, mixers, transport buckets, forms or other equipment is restricted to the designated washdown and washout areas. Wastewater generated in this area is to be recycled or treated prior to discharge. The storage of raw materials and washing of trucks and other equipment are necessary aspects of concrete products facilities. These activities are allowed by the general permit as long as they are handled in a way that provides for treatment of any wastewater prior to discharge. This special condition is consistent with EPA's "concrete products facilities" requirement in their Industrial Storm Water General Permit and applies to all equipment that is washed out of product (not just trucks).

5. Restrictions of waste concrete reclamation

Waste concrete that returns to the plant is either reclaimed at the truck washing facility or it is dumped on the plant site for drying and later reclamation for off-site fill or road base. The general permit restricts this practice to a designated area and prohibits any untreated discharge from it to surface waters. Until this concrete is dry, this wet waste concrete should be in a designated area that drains to the settling basins, the wet concrete is completely contained and cannot reach the receiving stream (even during normal (not 25 year-24 hour storm event) rain events) or the facility operates in a 'no-discharge' mode (see special condition 11 below).

6. Prohibition of sewage discharge

The discharge of sewage is not permitted under the draft general permit. The limits of the permit do not address pollutants of concern in domestic sewage.

7. Prohibition of unapproved chemical usage and prior approval requirement for change of chemical usage for noncontact cooling water

In order to assure protection of water quality and beneficial uses of the waters receiving the discharge, the use of any chemical additives, except chlorine, without prior approval is prohibited under this general permit. The general permit contains a water quality-based chlorine limitation.

The chemical treatment that is employed in the geothermal or other system will be identified on the registration statement and evaluated before the facility is covered under the general permit. Prior approval shall be obtained from the DEQ before any changes are made to the chemical usage in the geothermal or other system, during the life of the permit term.

8. Operation and maintenance manual requirement

The permittee is required to develop and implement an Operation and Maintenance Manual which includes procedures and practices for the mitigation of pollutant discharges and for the protection of state waters from the facility's operations. This will document procedures for plant personnel so that the other special conditions can be met. Facilities covered under the previous general permit are to review and modify the existing O& M manual within 90 days. During those 90 days, the existing O&M manual shall continue to be implemented.

9. Notification of municipal separate storm sewer system

If the facility discharges through a municipal separate storm sewer system (MS4) to surface waters, the permittee must notify the owner of the storm sewer of the presence of the discharge and provide a copy of such notice to DEQ.

10. Freeboard requirement

The purpose of this special condition is to prevent overflow. A minimum freeboard of one foot for the treatment/storage system is required to be maintained except during a 72-hour transition period after a measurable rainfall event. The transition period will provide sufficient flexibility for proper operation and maintenance of the facility. During the transition period, no discharge from the basins and lagoons shall occur unless it is in accordance with this permit. Within 72 hours after a measurable rainfall event, the freeboard must return to the minimum freeboard of one foot. Where basins are operated in a series mode of operation, the one foot freeboard requirement for the upper basins may be waived provided the final basin will maintain the freeboard requirements of this special condition. This reflects existing practice and design of these basins. It is deemed reasonable and protective since the additional treatment provided by series basins is preferred. A daily inspection requirement is added to ensure that freeboard is properly maintained. The inspection log is required to be kept onsite and be made available to DEQ upon request.

11. Requirement for "no discharge" mode operation

In the cases where either the process wastewater which may be commingled with noncontact cooling water or storm water runoff, or the storm water associated with industrial activity are retained in a treatment/storage system which operates in a "no-discharge" mode, this general permit prohibits any discharge of pollutants to surface waters from such system except in the case of a storm event which is greater than a 25 year-24 hour storm event. This special condition only applies to those operations which the permittee had designated as "no-discharge" in the accepted registration statement.

12. Notification levels

The permittee is required to report the discharge of any toxic pollutant from any activity that has occurred or will occur when that discharge, either on routine or non-routine basis, will exceed the highest of the listed notification levels. This condition is required by the VPDES Permit Regulation (9 VAC 25-31-200 A).

13. Liner requirements for the settling basins

In order to comply with the statutory mandate (State Water Control Law §62.1-44.15:5.2), House Bill 972 passed by the 1998 Session of the General Assembly and effective July 1, 1998, all settling basins, used for treatment and control of process wastewater and commingled storm water that were constructed on or after February 2, 1998, are required to be lined with concrete or any other impermeable materials prior to commencing operation. Concrete is the liner material of choice (as opposed to clay, for example) because settling basins are routinely shoveled out with heavy equipment. This requirement is not intended for basins constructed as best management practices for stormwater.

14. Reuse of treated wastewater for dust control

Reuse of wastewater for dust suppression has been a common practice for most of the concrete products facilities. This condition is to ensure that reuse of treated wastewater on site for the purposes of dust suppression is managed properly and no ponding or surface runoff will occur as a result of such activity, this condition is added to the general permit.

15. Compliance reporting

In accordance with Guidance Memo#00-2001, Amendment #3 and Guidance Memo 06-2016 (Significant Figures for Discharge Monitoring Reports, this special condition identifies the quantification levels for TRC and ammonia using two significant digits, and prescribes data handling protocols for the purposes of compliance reporting. In accordance with Guidance Memo 06-2016, the condition was ensures that the permittee reports discharge monitoring at two significant digits.

Part II Storm Water Management

Part II was reviewed for consistency with the EPA NPDES Storm Water Multi-Sector General Permit reissued on October 30, 2000 and all the sector-specific storm water pollution prevention plan requirements have been incorporated. These include drainage area site map, good housekeeping and routine inspections. Additional requirements for salt storage and storm water discharges associated with industrial activity from facilities subject to section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 reporting requirements are also included.

Part II A - D

Reporting of specific storm event sampling data and representative discharge requirements remain the same in this draft permit with one addition made in D. under the requirements for quarterly visual examination of storm water quality. This new requirement is that the visual quality of the receiving stream (including observations of solids deposition or oil sheen from the industrial activity) in the vicinity of the storm water outfall (including ditches and conveyances) must also be reported. This requirement is added due to staff concerns of concrete product entering the stream at some operations and will be logged with the other visual information. These observations should be recorded in the receiving stream as well as any other conveyances to the stream that may allow migration of the product to the stream. It is believed that visual examination of these areas will provide a useful and inexpensive means for permittees to evaluate the effectiveness of their storm water pollution prevention plans (SWP3s) and make any necessary modifications in housekeeping to address the results of the visual examinations.

In the event of adverse weather conditions in paragraph C, a substitute sample must be collected in the next period and data be submitted along with the data for the routine sample in that period. Restriction for exercising the waiver to no more than once during the permit term has been lifted

Part II E

In order to be an allowable nonstorm water discharge, the sources of nonstorm water must be identified in the SWP3 and, except for flows from fire fighting activities, the plan must identify and ensure the implementation of appropriate pollution prevention measures for such discharges.

Part II F

Discharge of hazardous substances or oil from a facility must be eliminated or minimized in accordance with the SWP3 developed for this facility. Where a release containing a hazardous substance or oil in a reportable amount, the permittee must notify the Department as soon as possible. Where a release enters a MS4, the permittee must notify the owner of the MS4. In addition, the SWP3 must be reviewed to identify measure to prevent the reoccurrence of such releases and to respond to such releases, and the plan must be modified as needed.

Part II.G
For a proposed discharge, the plan shall be prepared and implemented prior to the date of submission of the registration statement. This information should be provided under the registration statement Item 6. For an existing discharge, the time frame for preparation and implementation of the plan is within 270 days from the date of coverage under this permit. A facility covered under the previous general permit is required to update the plan in order to comply with the new requirements of the reissued general permit. In cases where construction is needed to implement measures required by the plan, the general permit requires the plan contain a compliance schedule for no later than 3 years. In order to be consistent with EPA NPDES Storm Water Multi-Sector General Permit, the sector specific SWP3s requirements are incorporated into this general permit. These include drainage area site map, good housekeeping and routine inspections. Additional requirements for salt storage and storm water discharges associated with industrial activity from facilities subject to section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 reporting requirements are also included.

Additional guidance on the development of the Storm Water Pollution Prevention Plan can be found in the EPA document titled Storm Water Management For Industrial Activities, Developing Pollution Prevention Plans and Best Management Practices, publication number EPA 832-R-92-006, September 1992.

Part III - General Permit Coverage

The general permit will have a fixed term of 5 years. Every authorization under this general permit will expire at the same time and all authorizations will be renewed on the same date, provided a complete registration statement has been filed prior to the general permit's expiration date.

All persons desiring to be covered by this general permit must register with the Department by filing a registration statement and applicable fees. The registration statement shall be submitted and a notification of coverage issued prior to any discharges or other activities for which this permit is required.

Concrete Products facilities that are discharging process wastewater and/or storm water associated with industrial activity to surface waters on the effective date of this general permit and which have not been issued an individual VPDES permit, are required to submit the registration statement. Existing operations with individual VPDES permits that wish to seek coverage under the proposed general permit would have to file a registration statement at least 180 days prior to the expiration date of the individual VPDES permit. For all new concrete products facilities that will have discharges of process wastewater or storm water associated with industrial activity and that will begin activities after

the effective date of this permit, the registration statement shall be filed at least 30 days prior to the commencement of operation of the concrete plant.

This general permit does not cover activities or discharges covered by an individual VPDES permit until the individual permit has expired or has been revoked. Any person conducting an activity covered by an individual permit, which could be covered by this general permit, may request that the individual permit be revoked and register for coverage under this general permit. Antibacksliding will be considered prior to granting the coverage under this general permit. Any owner or operator not wishing to be covered or limited by this general permit may make application for an individual VPDES permit, in accordance with VPDES procedures, stating the reasons supporting the request. This general permit will not apply to any new or increased discharge that will result in significant effects to the receiving waters. The determination is made in accordance with the State Water Control Board's Antidegradation Policy contained in the Virginia Water Quality Standards, 9 VAC 25-260-30.

All facilities that the Department believes are eligible for coverage under this general permit will be authorized to discharge under the terms and conditions of the permit after a complete registration statement is submitted, the applicable permit fee is paid and the Department sends a copy of the general permit to the applicant. If this general permit is inappropriate, the applicant will be so notified and the requirement that an individual permit or alternate general permit is needed will remain in effect.

STATS Program Output

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4/22/03 7:58:45 AM

Facility = Ready-Mixed Concrete Plant
Chemical = TRC
Chronic averaging period = 4
WLAa     = 0.019
WLAc     = 0.011
Q.L.     = 0.1
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

# observations = 1
Expected Value = .1
Variance       = .0036
C.V.           = 0.6
97th percentile daily values   = .243341
97th percentile 4 day average  = .166379
97th percentile 30 day average = .120605
# < Q.L.       = 0
Model used     = BPJ Assumptions, type 2 data


A limit is needed based on Chronic Toxicity
Maximum Daily Limit   = 1.60883226245856E-02
Average Weekly limit  = 1.60883226245856E-02
Average Monthly LImit = 1.60883226245856E-02


The data are:

 0.1
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